

What is claimed is:

- 1-21 x 30
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1. A method for mounting a lead frame to a circuit board having a first and second side, the lead frame having leads with a lead solder area for contact with solder material on the circuit board, the method comprising:
- first reflow soldering of the lead frame and a first set of electrical components on the first side of the circuit board;
 - inverting the circuit board; and
 - second reflow soldering of a second set of electrical components on the second surface of the circuit board, wherein the lead solder area is such that the lead frame stays connected to the first side of circuit board during the second reflow soldering.
2. The method of claim 1, wherein the ratio of the weight of the frame to the lead solder area is less than about 30 grams per square inch.
3. The method of claim 1, wherein the first set of electrical components includes low-profile electrical components.
4. The method of claim 1, wherein the lead frame is formed of a dielectric material with metal leads.
5. The method of claim 1, wherein the lead frame has a hub.
6. The method of claim 1, wherein each of the electrical components of the first set have a ratio of weight to solder area such that they are held in contact with the circuit board during the second reflow soldering.
7. The method of claim 1, further comprising attaching the first set of electrical components with an adhesive prior to the first reflow soldering.
8. The method of claim 1, wherein the circuit board comprises FR-4 material.
- drawing objected*

9. The method of claim 1, wherein the lead frame is substantially rigid.
10. The method of claim 9 wherein the leads of the lead frame are substantially coplanar.
11. A method for assembling a surface mount power supply device, the method comprising:
- providing a circuit board having a first and second side and a plurality of pads for electrical connections on each of the first and second sides;
 - applying a first amount of solder material on the plurality of pads of the first side;
 - positioning a first set of electrical components on the first side of the circuit board in contact with the solder material;
 - positioning a lead frame having leads so that the lead frame is adjacent to the first side of the circuit board and the leads are in contact with the solder material over a lead solder area;
 - first reflow soldering of the first side of the circuit board;
 - inverting the circuit board;
 - applying a second amount of solder material on the plurality of pads of the second side;
 - positioning a second set of electrical components on the second side of the circuit board in contact with the solder material; and
 - second reflow soldering with the second side of the circuit board, wherein the ratio of the weight of the frame to the lead solder area is such that the lead frame stays connected to the first side of circuit board during the second reflow soldering.
12. The method of claim 11, wherein the ratio of the weight of the frame to the lead solder area is less than about 30 grams per square inch.
13. The method of claim 11, wherein the first set of electrical components comprises low profile electrical components.

14. The method of claim 11, wherein the frame is formed of a dielectric material with metal leads.

15. The method of claim 11, wherein the lead frame has a hub.

16. The method of claim 11, wherein each of the electrical components of the first set has a ratio of weight to solder area such that it is held in contact with the circuit board during the second reflow soldering.

17. The method of claim 11, further comprising attaching the first set of electrical components with adhesive.

18. The method of claim 11, wherein the circuit board comprises FR-4 material.

19. The method of claim 11, wherein the lead frame is substantially rigid.

20. The method of claim 19 wherein the leads of the frame are substantially coplanar.

21. The method of claim 11, wherein the lead frame is positioned on and in contact with the first side of the circuit board.

22. A surface mount power supply device comprising:
a circuit board having a first and a second side and a plurality of lead pads for electrical connection on the first side of the circuit board and a plurality of component pads on each of the first and second sides of the circuit board;
a lead frame having leads soldered directly to the plurality of lead pads on the first side of the circuit board over a lead solder area forming solder joints so that the lead frame is only supported by the solder joints;
a first set of electrical components soldered on the plurality of component pads of the first side of the circuit board; and

a second set of electrical components soldered on the plurality of component pads of the second side of the circuit board.

23. The surface mount device of claim 22, wherein the first set of electrical components is soldered directly on the plurality of component pads of the first side of the circuit board forming solder joints so that the first set of electrical components is only supported by the solder joints.

24. The surface mount device of claim 22, wherein the lead frame has a weight and lead solder area with a ratio less than about 30 grams per square inch.

25. The surface mount device of claim 22, wherein the lead frame has a hub.

26. The surface mount device of claim 22, wherein the first set of electrical components comprises low profile electrical components.

27. The method of claim 22, wherein the circuit board comprises FR-4 material.

28. The method of claim 22, wherein the lead frame is substantially rigid.

29. The method of claim 27, wherein the leads of the frame are substantially coplanar.

30. A method of assembling a surface mount power device, the method comprising:
providing a circuit board having a first and second side;
providing a lead frame having leads and a ratio of frame weight to lead solder area for contact with solder material;
first reflow soldering of the lead frame and a first set of electrical components on the first side of the circuit board;
inverting the circuit board; and
second reflow soldering of a second set of electrical components on the second surface of the circuit board, wherein the ratio of frame weight to lead solder area is such that

molten solder holds the lead frame in contact with the first side of the board circuit during the second reflow soldering.

31. The method of claim 29, wherein the surface mount power device is a DC/DC converter.

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